

What is claimed is:

1. An oil-cooling system for lubricating oil of a vehicle engine, the system comprising:

- 5 a radiator having an oil inlet and an oil outlet communicating with internal passages of the radiator;
- an electrically-operated fan interfaced to the radiator in a manner to urge air through the radiator over the internal passages, the fan turned on and off by a temperature sensitive switch sensing oil temperature;
- 10 a valve having a first inlet, a first passage through the valve through a first chamber to a first outlet, a second inlet, a second passage through the valve through a second chamber to a second outlet, and a translatable valve closure element controlling a passage from the first chamber to the second chamber; and
- 15 a temperature-operated translation element positioned in the first chamber in the path of oil entering the valve through the first inlet, and connected to the translatable valve element in a manner to progressively close the passage from the first chamber to the second chamber at higher oil temperature, and to progressively open the passage from the first chamber to
- 20 the second chamber at lower oil temperature;
- characterized in that, below a first oil temperature the passage between the first and the second chamber remains open allowing oil coming in the first inlet to bypass the radiator to the second outlet, the passage closes gradually as oil temperature rises, closes completely at the first oil
- 25 temperature so that all oil coming in the first inlet must pass through the radiator and none may bypass, and in that the temperature-sensitive switch operating the fan causes the fan to start at a second oil temperature higher than the first oil temperature, enhancing ability of the radiator to cool the oil.

2. The system of claim 1 further comprising a void between the fan and the radiator, providing a positive pressure chamber for air prior to passing over the radiator internal passages, such that air urged by the fan into the positive pressure chamber is distributed evenly over the internal oil passages.
3. The system of claim 1 wherein the radiator comprises a stack-tube design.
4. The system of claim 1 wherein the translatable valve closure element is preloaded in both translation directions by springs of differing spring rate, thereby providing a controlled force bias keeping the valve open at oil temperatures below the first temperature.
5. The system of claim 1 wherein the temperature-operated translation element comprises a volume of temperature-sensitive wax that expands with increasing temperature.
6. The system of claim 1 wherein, at maximum opening of the passage between the first and second chamber, the opening allows at least seventy percent of oil from the vehicle engine to bypass the radiator and return to the vehicle engine.
7. The system of claim 1 wherein, at maximum opening of the passage between the first and second chamber, the opening allows at least ninety percent of oil from the vehicle engine to bypass the radiator and return to the vehicle engine.

8. The system of claim 1 wherein the vehicle engine is a motorcycle engine.

9. The system of claim 1 further comprising a shroud protecting the
5 radiator when mounted on a vehicle.

10. The system of claim 9 further comprising a mounting plate, one or more
downtube mounting elements, and connectors and conduits compatible with
a motorcycle, thereby providing an aftermarket kit for integrating the system
10 to a motorcycle.

11. A method for managing oil temperature for a vehicle engine, comprising
the steps of:

(a) determining a preferred temperature window for oil in operation
15 of the vehicle, comprising a first, lower temperature, and a second, higher
temperature;

(b) pumping oil from the vehicle engine to a control valve controlling
oil passage into a radiator, and bypassing the radiator via a by-pass passage
in the control valve more than seventy-percent of the oil to return to the
20 vehicle engine without passing through the radiator upon cold start-up;

(c) closing the bypass passage at the first oil temperature, forcing all
oil entering the control valve to pass through the radiator before returning to
the vehicle engine;

(d) starting a forced-air fan at the second temperature to urge
25 ambient air through air passages of the radiator, thereby enhancing ability of
the radiator to cool the oil passing through; and

(e) as oil temperature falls, opening the bypass passage again at the
first temperature.

12. The method of claim 11 wherein a void is provided between the fan and the radiator, providing a positive pressure chamber for air prior to passing over the radiator internal passages, such that air urged by the fan into the positive pressure chamber is distributed evenly over the internal oil passages.

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13. The method of claim 11 wherein the radiator comprises a stack-tube design.

10 14. The method of claim 11 wherein the translatable valve closure element is preloaded in both translation directions by springs of differing spring rate, thereby providing a controlled force bias keeping the valve open at oil temperatures below the first temperature.

15 15. The method of claim 11 wherein the temperature-operated translation element comprises a volume of temperature-sensitive wax that expands with increasing temperature.

20 16. The method of claim 11 wherein, at maximum opening of the passage between the first and second chamber, the opening allows at least seventy percent of oil from the vehicle engine to bypass the radiator and return to the vehicle engine.

25 17. The method of claim 11 wherein, at maximum opening of the passage between the first and second chamber, the opening allows at least ninety percent of oil from the vehicle engine to bypass the radiator and return to the vehicle engine.

18. The method of claim 11 wherein the vehicle engine is a motorcycle engine.

19. The method of claim 11 wherein a shroud protects the radiator when
5 mounted on a vehicle.

20. The method of claim 19 further comprising a mounting plate, one or
more downtube mounting elements, and connectors and conduits compatible
with a motorcycle, thereby providing an aftermarket kit for integrating the
10 system to a motorcycle.